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(54) **HYDROXYMETHYLFURFURAL REDUCTION METHODS AND METHODS OF PRODUCING FURANDIMETHANOL**

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See application file for complete search history.

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(57) **ABSTRACT**

A method of reducing hydroxymethylfurfural (HMF) where a starting material containing HMF in a solvent comprising water is provided. H<sub>2</sub> is provided into the reactor and the starting material is contacted with a catalyst containing at least one metal selected from Ni, Co, Cu, Pd, Pt, Ru, Ir, Re and Rh, at a temperature of less than or equal to 250° C. A method of hydrogenating HMF includes providing an aqueous solution containing HMF and fructose. H<sub>2</sub> and a hydrogenation catalyst are provided. The HMF is selectively hydrogenated relative to the fructose at a temperature at or above 30° C. A method of producing tetrahydrofuran dimethanol (THFDM) includes providing a continuous flow reactor having first and second catalysts and providing a feed comprising HMF into the reactor. The feed is contacted with the first catalyst to produce furan dimethanol (FDM) which is contacted with the second catalyst to produce THFDM.

11 Claims, 80 Drawing Sheets